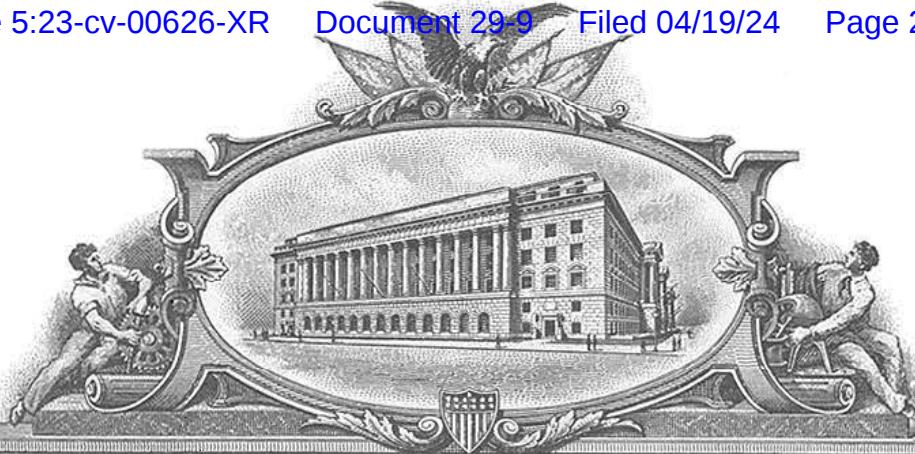


## Appendix I



8440656

# THE UNITED STATES OF AMERICA

**TO ALL TO WHOM THESE PRESENTS SHALL COME:**

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

*December 13, 2023*

**THIS IS TO CERTIFY THAT ANNEXED IS A TRUE COPY FROM THE RECORDS OF THIS OFFICE OF THE FILE WRAPPER AND CONTENTS OF:**

**APPLICATION NUMBER: 12/944,549**

**FILING DATE: November 11, 2010**

**PATENT NUMBER: 8870737**

**ISSUE DATE: October 28, 2014**



Certified by

Performing the Functions and Duties of the  
Under Secretary of Commerce  
for Intellectual Property  
and Director of the United States  
Patent and Trademark Office

## REMARKS

The following remarks are in response to the Examiner's Non-Final Office Action mailed on September 13, 2013. Claims 1, 2 and 7 are amended. Support for claim amendments can be found in the application as filed. See, e.g., paragraphs [0227] and [0228]. Claims 1-21 are pending (of which, Claims 12-21 are Withdrawn). Reconsideration is respectfully requested in light of the following remarks.

### ***Double Patenting***

Claims 1-10 were rejected under the judicially created doctrine of obviousness-type double patenting as allegedly being unpatentable over claims 1, 2, 3, 4, 5, 7, 9, 10, 12, 13, 16, 18, 19, and 20 of U.S. Patent No. 8,475,354.

Claims 1-3 and 5-11 were also rejected as being unpatentable over claims 1-3, 6, 7, 9, 10, 11, 13, 14, and 15 of U.S. Patent No. 8,480,554.

Claims 1, 2, 3, 5, 6, 7, 9, 10, and 11 were also rejected as being unpatentable over claims 1, 2, 3, 5, 6, 7, 9, 10, and 11 of U.S. Patent No. 8,465,408.

While Applicants do not necessarily agree with this position taken by the Examiner, Applicants request that such rejection be held in abeyance and Applicants will then consider submitting a terminal disclaimer or additional arguments if appropriate.

### ***Claim Rejection - 35 USC § 112***

Claim 7 was rejected under 35 U.S.C. 112 (b) or 35 U.S.C 112 (pre-AIA), second paragraph. Applicants thank the Examiner for his suggested amendment, which has been made in the presently amended claim set. Withdrawal of this rejection basis is respectfully requested.

### ***Claim Rejections – 35 USC § 102***

Claims 1-5 and 11 were rejected under pre-AIA 35 U.S.C. 102(b) as being anticipated by US 6,488,617 (“Katz”).

Katz fails to anticipate the elements of Claims 1-5 and 11, at least. Katz describes a feedback system, which in real time, tries to move a subject from a current brain state into a desired brain state via magnetic stimulation. Brain states targeted in Katz are categorized based on the level of alertness of the subject. (Col. 1, line 14 to 34). These states include sleep states

associated with brain wave frequencies in the delta and theta ranges of 1.5 to 3.5 Hz and 3.5 to 7 Hz, respectively, a relaxed state associated with brain wave frequencies in the alpha range of 7.5 to 12.5 Hz, and an excited state associated with brain wave frequencies in the beta range of 12.5 to 20 Hz (*Id.*, *See also*, Col. 6, lines 16-35). Thus, each state of Katz is within a different EEG band, and Katz tries to move the subject from one state (in one band) to another state (in another band). At least the following distinctions can be made from the present claims.

With respect to Claims 1 and 2, as amended, Katz fails to teach or suggest moving “an intrinsic frequency of a specified EEG band of the subject toward a pre-selected intrinsic frequency of the specified EEG band” and with respect to Claim 1, Katz further fails to teach or suggest moving “a Q-factor of an intrinsic frequency within a specified EEG band of a subject toward a pre-selected Q-factor.” Additionally, Katz fails to disclose or suggest that “the pre-selected intrinsic frequency is a frequency that increases blood flow in the cortex of the subject” or that “the pre-selected Q-factor is a Q-factor that increases blood flow in the cortex of the subject” as required in Claim 1. Similarly, with respect to Claim 2, Katz fails to disclose or suggest that “the pre-selected intrinsic frequency is a frequency that decreases blood flow in a lower region of the brain of the subject”

In contrast, Katz targets a desired brain state, which encompasses a range of frequencies in multiple bands. Claim 1 of the present invention targets a pre-selected intrinsic frequency, not a state encompassing a range of frequencies. The Office Action tacitly acknowledges this difference by referring to the desired state of Katz and frequencies in each state, as opposed to a particular pre-selected frequency as is claimed.

Further, Claim 1 of the present invention recites adjusting output of a magnetic field and moving the subject’s intrinsic frequency in a specified EEG band toward a pre-selected intrinsic frequency of the same EEG band, wherein the pre-selected intrinsic frequency is a frequency that increases blood flow in the cortex of the subject, and wherein the pre-selected Q-factor is a Q-factor that increases blood flow in the cortex of the subject. On the other hand, Katz’s only intention and goal is to move a subject from a current brain state into a desired brain state. Since the brain states correlate to separate EEG bands in Katz (i.e. from relaxed in the alpha band to sleep in the delta or theta band), Katz’ methods and devices move the brain waves from one band to another.

The Office Action states “Katz discloses a method that influences EEG frequencies in the brain by applying a magnetic field close to the head of a subject. Katz states that the invention

disclosed executes steps to influence intrinsic frequencies of EEG bands to a desired state via magnetic stimulation” (column 6, lines 16-61). This action makes the adjustments to a magnetic field based on a subject's intrinsic frequency and would require the determination of the subject's intrinsic frequency in a specified EEG band.” On the contrary, Katz's actually says that the system compares the characteristics of the actual brain state to those of the desired brain state. The characteristics of the brain state are the temporal and spatial distributions of the *various frequency bands of the brain signal, e.g., the mean frequency corresponding to various magnitudes of alpha, beta, delta, and theta rhythms*. The therapeutic goal determines the gap between the measured and desired brain state, how the system adjusts key parameters of the magnetic stimulation in order to reduce the gap between the actual and desired state, and what constitutes an acceptable brain state. *For example, an acceptable brain state may be achieved by obtaining lower frequency states*, between 1.5 and 7.5 HZ, to induce and/or maintain sleep, producing alpha frequency brain waves (between 8 and 13 HZ) to achieve calm or relaxation, etc. In sum, Katz is concerned with moving the current brain state to another brain state (in Column 6 lines 16-61). In contrast, Claims 1 and 2 of the present invention, and claims dependent therefrom, require moving the intrinsic frequency in a single EEG band, or moving the Q factor of an intrinsic frequency in a single EEG band (Claim 1).

Based on the above, at least, Applicants submit the independent Claims 1 and 2, as amended, and all claims dependent therefrom, are in condition for allowance and advancement to allowance is earnestly solicited.

### ***Claim Rejections - 35 USC § 103***

Claim 6 was rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over US 6,488,617 (“Katz”) as applied to claims 1 and 2 above, and further in view of US 6,001,055 (“Souder”). Claim 7 was rejected under pre-AIA U.S.C. 103(a) as being unpatentable over US 6,488,617 (“Katz”) and US 6,001,055 (“Souder”) as applied to claim 6 above, and further in view of US 5,667,469 (“Zhang et al.”). Claims 8 and 9 were rejected under pre-AIA U.S.C. 103(a) as being unpatentable over US 6,488,617 (“Katz”) as applied to claims 1 and 2 above, and further in view of US 5,788,624 (“Lu et al.”). Claim 10 was rejected under pre-AIA U.S.C. 103(a) as being unpatentable over US 6,488,617 (“Katz”) as applied to claims 1 and 2 above, and further in view of US 3,821,949 (“Hartzell et al.”).

To establish a *prima facie* case of obviousness, the cited art itself or “the inferences and creative steps that a person of ordinary skill in the art would [have] employ[ed]” at the time of the

invention are to have taught or suggested the claim elements. *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1742 (2007); *See also* MPEP § 2143.03. Thus, the Examiner must make “a searching comparison of the claimed invention – including all its limitations – with the teaching of the prior art.” *In re Ochiai*, 71 F.3d 1565, 1572 (Fed. Cir. 1995). As such, “obviousness requires a suggestion of all limitations in a claim.” *CFMT, Inc. v. Yieldup Intern. Corp.*, 349 F.3d 1333, 1342 (Fed. Cir. 2003) (citing *In re Royka*, 490 F.2d 981, 985 (CCPA 1974)).

As noted above with regard to Claims 1, 2, Katz fails to disclose or suggest all of the elements in each of the noted independent claims. None of Souder, Zhang, Lu, and Hartzell whether considered alone or in combination with Katz or any other reference make up for the deficiencies of Katz, as noted above. Thus, Applicants submit that independent Claims 1 and 2, and all claims dependent therefrom, are in condition of allowance.

## CONCLUSION

In light of the remarks set forth above, Applicants believe that the pending claims are under condition for allowance. Applicants respectfully solicit the Examiner to expedite the prosecution of this patent application to issuance. Should the Examiner have any questions, the Examiner is encouraged to telephone the undersigned.

The Commissioner is authorized to charge any underpayment or credit any overpayment to Deposit Account No. 23-2415 (Attorney Docket No. 35784-707.202).

Respectfully submitted,

Date: February 13, 2014

By: /Kristin Havranek/  
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/237,319	09/24/2008	James William Phillips	35784-701.201	9568
21971	7590	10/14/2011	EXAMINER	
WILSON, SONSINI, GOODRICH & ROSATI 650 PAGE MILL ROAD PALO ALTO, CA 94304-1050				LANNU, JOSHUA DARYL DEANON
ART UNIT		PAPER NUMBER		
3735				
		MAIL DATE		DELIVERY MODE
		10/14/2011		PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b><i>Office Action Summary</i></b>	<b>Application No.</b>	<b>Applicant(s)</b>
	12/237,319	PHILLIPS ET AL.
	<b>Examiner</b> JOSHUA D. LANNU	<b>Art Unit</b> 3735

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### **Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

1)  Responsive to communication(s) filed on 06 April 2011.

2a)  This action is **FINAL**.                    2b)  This action is non-final.

3)  An election was made by the applicant in response to a restriction requirement set forth during the interview on \_\_\_\_\_; the restriction requirement and election have been incorporated into this action.

4)  Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

5)  Claim(s) 1-46 and 48-51 is/are pending in the application.  
5a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

6)  Claim(s) \_\_\_\_\_ is/are allowed.

7)  Claim(s) 1-46 and 48-51 is/are rejected.

8)  Claim(s) \_\_\_\_\_ is/are objected to.

9)  Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

10)  The specification is objected to by the Examiner.

11)  The drawing(s) filed on 08 December 2008 is/are: a)  accepted or b)  objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

12)  The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

13)  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a)  All    b)  Some \* c)  None of:  
1.  Certified copies of the priority documents have been received.  
2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3.  Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1)  Notice of References Cited (PTO-892)  
2)  Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3)  Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date *See Continuation Sheet*.  
4)  Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.  
5)  Notice of Informal Patent Application  
6)  Other: \_\_\_\_.

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :1/25/2009, 2/10/2009, 10/12/2010, 12/13/2010, 2/3/2011, 4/6/2011

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## **DETAILED ACTION**

### ***Claim Objections***

1. Claims 15, 21, 22, and 23 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim should refer to other claims in the alternative form only. See MPEP § 608.01(n). Accordingly, the claims have not been further treated on the merits.

### ***Double Patenting***

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned

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with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 1- 4 of this application conflict with claims 1- 4 of Application No. 12237328. Claims 1- 4, 10-13, 16, and 18-20 of this application conflict with claims 1, 3-7, and 9 -10 of Application No. 12850547. 37 CFR 1.78(b) provides that when two or more applications filed by the same applicant contain conflicting claims, elimination of such claims from all but one application may be required in the absence of good and sufficient reason for their retention during pendency in more than one application. Applicant is required to either cancel the conflicting claims from all but one application or maintain a clear line of demarcation between the applications. See MPEP § 822.

4. Claims 1- 4 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 - 4 of copending Application No. 12237328. Although the conflicting claims are not identical, they are not patentably distinct from each other because the copending application discloses the same method for treating a subject with depression which anticipates using the method in treating a subject.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

5. Claims 1- 4 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of copending Application No. 12850547.

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6. Claim 10 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 3 of copending Application No. 12850547.

7. Claim 11 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 4 of copending Application No. 12850547.

8. Claim 12 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 5 of copending Application No. 12850547.

9. Claim 13 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 6 of copending Application No. 12850547.

10. Claim 16 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 7 of copending Application No. 12850547

11. Claims 18 and 19 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 9 and 10 of copending Application No. 12850547.

12. Claim 20 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 11 of copending Application No. 12850547.

13. Although the conflicting claims are not identical, they are not patentably distinct from each other because the copending application discloses the same method for treating a subject with Parkinson's disease coma, post traumatic stress disorder, amblyopia, and/or enhancing cognitive performance which anticipates using the same method in treating a subject.

14. These are provisional obviousness-type double patenting rejections because the conflicting claims have not in fact been patented.

15.

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***Claim Rejections - 35 USC § 101***

16. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim 33 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. In regards to claim 33, Claim 33 recites that “the second electrode is located on the subject”. This recites a positive relationship to the human body. However, the human body is non-statutory subject matter and cannot be positively recited. Therefore, Applicant should amend the claim to recite that –the second electrode is adapted to be located on the subject--.

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1- 4, 9, 10-12, 15, 24, 25, 46, and 48-51 are rejected under 35 U.S.C. 102(b) as being anticipated by US 6,488,617 (Katz).

3. In regards to claim 1, Katz discloses a method that influences EEG frequencies in the brain by applying a magnetic field close to the head of a subject. Katz states that the invention disclosed executes steps to influence intrinsic frequencies of EEG bands to a desired state via

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magnetic stimulation (column 6 lines 16-61). Katz discloses the algorithm that is executed by a computational system that adjusts parameters of magnetic stimulation until the distance between the desired EEG signal and the actual EEG signal is minimized (column 7 lines 26-63). Katz also shows in figure 2 a system with magnets that apply the magnetic field to the head of the subject (column 6 line 62 – column 7 line 18).

4. In regards to claim 2, Q-factor is being interpreted as the bandwidth about a center frequency. Katz discloses a method that influences EEG frequencies in the brain by applying a magnetic field close to the head of a subject. Katz states that the invention disclosed executes steps to influence intrinsic frequencies of EEG bands to a desired state via magnetic stimulation (column 6 lines 16-61). Katz discloses the algorithm that is executed by a computational system that adjusts parameters until the distance between the desired EEG signal and the actual EEG signal is minimized (column 7 lines 26-63). Katz states that a higher magnitude magnetic field increases the focus of a mean frequency, which is the equivalent of modifying the bandwidth of an intrinsic frequency to a preselected bandwidth (column 6 lines 16-61). Katz also shows in figure 2 a system with magnets that apply the magnetic field to the head of the subject (column 6 line 62 – column 7 line 18).

5. In regards to claims 3 and 4, coherence is defined as waves with the same frequency and in phase. Katz discloses a method that influences EEG frequencies in the brain by applying a magnetic field close to the head of a subject by stimulation along multiple sites in a brain of a subject (figure 2). Katz states that the invention disclosed executes steps to influence intrinsic frequencies of EEG bands to a desired state via magnetic stimulation (column 6 lines 16-61). Katz discloses the algorithm that is executed by a computational system that adjusts parameters

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until the distance between the desired EEG signal and the actual EEG signal is minimized (column 7 lines 26-63). Katz shows the method of stimulating multiple sites in figure 2 as well as influencing coherence from multiple sites in the brain to get to a state of relaxation, which is correlated to the strength of the alpha band (column 8 line 39- column 9 line 16). Katz also shows in figure 2 a system with magnets that apply the magnetic field to the head of the subject (column 6 line 62 – column 7 line 18).

6. In regards to claim 9, Katz discloses methods that influences EEG frequency, Q factor, coherence and phase by applying a magnetic field close to the head of a subject as applied to claims 1 - 4. Katz further states that the invention disclosed executes steps to influence intrinsic frequencies of EEG bands to a desired state via transcranial magnetic stimulation (TMS) (column 6 lines 16-61).

7. Katz discloses the algorithm that is executed by a computational system that adjusts parameters until the distance between the desired EEG signal and the actual EEG signal is minimized (column 7 lines 26-63). Katz also shows in figure 2 a system with magnets that apply the magnetic field to the head of the subject (column 6 line 62 – column 7 line 18). Katz states that a higher magnitude magnetic field increases the focus of a mean frequency, which is the equivalent of modifying the bandwidth of an intrinsic frequency to a preselected bandwidth (column 6 lines 16-61). Katz shows the method of stimulating multiple sites in figure 2 as well as influencing coherence, waves with the same frequency and in phase, from multiple sites in the brain to get to a state of relaxation, which is correlated to the strength of the alpha band with a TMS device (column 8 line 28- column 9 line 16). Katz also shows in figure 2 a system with magnets that apply the magnetic field to the head of the subject (column 6 line 62 – column 7

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line 18). One of the parameters disclosed in the method of Katz is the pulse frequency and duration of the application of the magnetic field (column 6 line 62 – column 7 line 18), which would be a repetitive firing of a magnetic field.

In regards to claims 10-12, and 15 Katz discloses all elements of claims 1-4. In addition, Katz states the step of measuring EEG data after the application of the magnetic field in claim 21. Katz discloses the step of adjusting parameters of the magnetic field and repeating the applying step with an adjusted parameter in claim 21. Katz further states that pulse frequency of the magnetic field is one of the parameters (column 6 lines 45-54). Katz also teaches the application of a larger magnet set to achieve large scale synchronization of two hemispheres (column 8 line 39 – column 9 line 16), which is interpreted as the application of a magnetic field over a diffuse area of the brain. Katz also states that frequencies between 1.5 Hz and 7.5 Hz induce a specific type of intrinsic frequency band (column 6 lines 29-34) and further states that frequencies below 1 Hz suppress activity while frequencies about 1 Hz excite the cortex. This disclosure meets the limitations specified in claim 15.

In regards to claims 24 and 25, Katz discloses the limitations if claims 4 and 9. In addition, in one method of Katz, there are two sources of magnetic fields (figure 2 elements 3A and 3B) that correspond to magnets for stimulating different hemispheres (column 8 lines 39-59). In addition, because this embodiment states that only one hemisphere at a time is stimulated (column 8 lines 39-59), that would make the stimulation of the magnetic sources be 180 degrees out of phase with each other.

In regards to claim 46 and 48 - 51, Katz discloses an embodiment where the device is comprised of a Transcranial Magnetic Stimulation (TMS) device. Figure 2 shows a TMS device

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setup where one hemisphere at a time is stimulated and is located on the head of a subject (column 8 lines 28-59). The TMS device would then be a means for applying a magnetic field to a head of a subject. Katz as applied to claims 1-4 discloses the steps of using the device to influence an intrinsic frequency of a brain of the subject within a specified EEG band, a Q-factor of an intrinsic frequency of a brain subject within a specified EEG band, a coherence of intrinsic frequencies among multiple sites in the brain of a subject within a specified EEG band, and an EEG phase. Figure 1 discloses the system and shows EEG electrodes (element 1) with an EEG preprocessing circuit (elements 5 and 6), and a computation system (element 7) which would be the EEG device. Katz also discloses that the EEG device relays information to the TMS device in order to achieve coherence (column 8 lines 39-59). In addition, Katz also states that the TMS device (elements 7 and 8) adjusts stimulation based on received information from the EEG device and the data is used in order to achieve coherence or influencing a specific intrinsic frequency (column 6 line 62- column 7 line 18, column 8 lines 39-59).

8. Claims 26, 28, 29, 34, 35, 37, and 38 are rejected under 35 U.S.C. 102(b) as being anticipated by US 6,001,055 (Souder).

9. In regards to claim 26, 28, and 29, Souder discloses several device embodiments made of at least one permanent magnet (element 24, column 6 lines 14-16) and a subunit coupled to the magnet that allows the magnet to rotate in a rotational motion (column 6 lines 37-39) such as element 20 in figure 3. Souder states that a moving magnetic field is generated by the rotation of the permanent magnet and subjects the treatment area to varying intensities of north or south pole fields (column 6 lines 1-36). Souder also states that the speeds at which the shafts spin are preferably between 400 – 8000 revolutions per minute (RPMs), which based on RPM to Hz

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conversions would be between 6.66 Hz and 133.33 Hz (column 8 lines 17-32) which overlaps in the range specified by Applicant. In addition, Souter states that the device is capable of going to lower frequencies as dictated to get to an optimal frequency (column 8 lines 30-32), which would enable movement to the at the 0.5 Hz frequency.

10. In regards to claims 34 and 35, Souder discloses the limitations of claim 26. In addition Souder states how using the device increases relaxation, which is an improvement of stress release, which is noted by an increase alpha frequency activity (column 4 lines 15-18 and column 8 line 60 – column 9 line 16). Additionally, Souder also states that the device can be used to treat depression by increasing the activity in the left prefrontal cortex (column 4 lines 10-14 and column 8 lines 30-32) as well as induce and maintain sleep by keeping the brain in a certain frequency state (column 9 lines 17-22).

In regards to claims 37 and 38 Souder discloses the limitations of claim 26, In addition the device of Souder also has a motor (element 18), a rotating element coupled to a magnet (element 20), and a power source capable of powering the motor (element 36), which in this case are batteries connected to the motor via electrical connections (element 38). Souder also shows multiple configurations (figure 3C-E) where there are multiple permanent magnets coupled to the subunit (element 20), which is a rotating element. As stated in claim 26, Souter discloses the rotational speed of the shaft which is the same speed specified in claim 38. Being coupled to the shaft, the second magnet will move at same frequencies specified.

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***Claim Rejections - 35 USC § 103***

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

13. Claims 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,488,617 (Katz) as applied to claims 1-4 above, and further in view of US PG Pub 2005/0070778 (Lackey et al.).

In regards to claims 5-8, Katz discloses the limitations of claims 1- 4. Katz discloses the steps of adjusting device parameters so that differences between observed and desired signals are minimized (column 7 lines 26-62). For example Katz discloses determining the intrinsic frequency of a subject within a specified EEG band in order to compare it to a desired brain state (column 6 lines 16-25), determining the Q-factor/bandwidth of the intrinsic frequency within a specified EEG band (column 6 lines 16-25), determining coherence value of intrinsic frequencies among multiple locations throughout the scalp of the subject (column 8 line 39 - column 9 line 16), and determining the EEG phase between at least two locations measured on the head of the

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subject (column 8 line 39 - column 9 line 16). Katz also states the parameters modified and the steps of adjusting the magnetic field to higher or lower frequencies until the difference between actual and desired signals is minimized (column 6 lines 16-61 and column 7 lines 26-48).

However, Katz does not disclose comparing the values to an average from a healthy population database. Lackey teaches the use method of comparing a signal to a population database. Lackey states that taking an average from a population allows the establishment of a baseline in which data can be compared to see deviations from a baseline and note shifts to disease states (paragraphs 148 and 151). It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the step of comparing the intrinsic frequency, Q-factor, coherence value, or EEG phase with a healthy population into the methods disclosed by Katz in order to compare the observed signals to a baseline and spot deviations from the average.

Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,488,617 (Katz) as applied to claims 1 - 4 above, and further in view of US 6,001,055 (Souder).

In regards to claims 13 and 14, Katz discloses all limitations of claims 1- 4. However Katz does not use a permanent magnet to generate the magnetic field for magnetic therapy in the mentioned method. Souder discloses the use of a magnetic therapy device with at least one permanent magnet (element 24 and column 2 lines 58-63). Souder states that a moving magnetic field is generated by the rotation of the permanent magnet and subjects the treatment area to varying intensities of north or south pole fields (column 6 lines 1-36). In addition Souder states that in addition to applying the dynamic field enhances the beneficial effects of magnetic therapy (column 1 lines 25-30). It would have been obvious to one of ordinary skill in the art at the time

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the invention was made to use a permanent magnet with rotational motion as taught by Souder in the method of Katz in order to enhance the beneficial effects of magnetic therapy.

Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,488,617 (Katz) and US 6,001,055 (Souder) as applied to claim 13 above, and further in view of US 5,667,469 (Zhang et al.).

In regards to claims 16 and 17, Katz and Souder disclose the limitations of claim 13. However, Katz and Souder do not explicitly state that the strength of the permanent magnet is from about 10 Gauss to about 4 Tesla nor state that the distance between the permanent magnet and the subject is from about 1/32 inch to about 12 inches. Zhang et al. (hereinafter referred to as Zhang) teaches a rotating permanent magnet device for medical therapy. Zhang states that the magnet of the device can generate a magnetic field intensity of about 0.1-0.8 Tesla (column 6 lines 6-24), which falls within the range specified in claim 16. Katz states that increasing the magnitude of the magnetic field implies a greater focus (column 6 lines 40-44). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the permanent magnet with a strength of about 0.1-0.8 Tesla as taught by Zhang in the method disclosed by Katz and Souder in order to increase focus of a magnetic field in a treatment area.

Katz, Souder and Zhang do not address the specific distance of the patient and the magnet. It can be seen in figure 3 that the patient is placed on a table with the magnet underneath the table exerting its magnetic field. Zhang states that the treatment diameter can go up to 950 mm/37.4 inches (column 6 lines 6-24). The treatment radius then would be 19.7 inches, where the treatment radius is interpreted as range of distances from the magnet where a patient can be placed. Zhang does not address the range specified. However the treatment diameter of 37.4

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inches includes the specified range of 1/32 inch to 12 inches. Applicant has not disclosed that the range specified solves any stated problem or is for any particular purpose. Moreover, it appears that the range of Katz, Souder, and Zhang or the applicant's invention would perform equally well with applying the magnetic field to the head to influence EEG signals from an actual to a desired state.

Accordingly, it would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to have modified Katz, Souder, and Zhang such that the range used between the subject and magnet in the method is from about 1/32 inch to about 12 inches because the general conditions of the claim are disclosed in the prior art. Furthermore, it would be the natural desire of scientists or artisans to optimize ranges in order to improve on what is generally known.

Claims 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over 6,488,617 (Katz) as applied to claims 1-4 above, and further in view of US 5,788,624 (Lu et al.).

In regards to claims 18 and 19, Katz discloses the limitations of claims 1 - 4. However Katz makes no mention of the timing of application of the magnetic field. Lu et al. (hereinafter referred to as Lu) discloses a step of administering magnetic field therapy with a duration of 20-40 minutes once each a day for a period of 12 - 14 days (column 3 lines 55-64). Lu states that a transient magnetic field does not make a patient uncomfortable and that exposure to a continuous magnetic field may cause other issues such as headaches, insomnia, etc... (column 3 line 65 – column 4 line 14). Lu also states that transient application brings an effective interaction of the blood, body fluids, nervous system, channels, and collaterals of the body within a short period of time (column 2 lines 33-41). It would have been obvious to one of ordinary skill in the art at the

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time the invention was made to use transient magnetic fields with durations of 20-40 minutes per day over 12-14 days as taught by Lu in the method of Katz in order to provide an effective interaction of blood, body fluids, nervous system, channels, and collaterals of the body.

14. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over 6,488,617 (Katz) as applied to claims 1-4 above, and further in view of US 3,821,949 (Hartzell et al.).

In regards to claim 20, Katz discloses the limitations of claims 1-4. Katz teaches the use of a device with magnetic stimulation and EEG recording capabilities to produce a desired brain state. In figure 1 a set of electrodes (element 1) are located on the scalp of the subject to measure the EEG, brain activity, of the individual (column 5 lines 20-33). Electrical resistivity is the measure of how strongly a material opposes the flow of electric current. Because all the electrodes are on skin, which allows electric current to flow, the electrodes would be on an area of low electrical resistivity. Electrical impulse interference is essentially noise. Additionally, because the electrodes are on the scalp, the electrodes are in an area with substantially no electrical impulse interference due to the electrical signals being mostly coming from neurons instead of other sources such as eye muscles. All the electrodes are operable to detect brain activity. If one electrode is chosen as the one for detecting brain activity, any of the other electrodes can function as a second electrode that is operable to detect a reference signal. Katz also states the step of determining the mean frequency, an intrinsic frequency, of a subject in order to determine differences between an actual and desired brain state (column 6 lines 16-61). However, Katz does not explicitly state that the intrinsic frequency is determined from the electrical activity from the first electrode and the reference signal detected by the second electrode. Hartzell discloses the specifics of EEG devices. Hartzell specifically outlines the use

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of a reference electrode (element 38) and an active electrode (element 46) to sense brain wave potentials (column 7 line 55 – column 8 line 14). The biofeedback apparatus (figure 2 element 10a) takes the signals from the active electrode and the reference electrode. The signal is then run through amplifiers and passed through filters for specific frequency ranges to determine the frequencies for alpha, beta, and theta bands (column 8 line 15 – column 9 line 2). Hatzell in particular specifies using the ear lobes as reference and neutral electrodes to sense brain wave potentials (column 8 lines 2-14) It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a reference and source electrode as taught by Hartzell in the method disclosed by Katz in order to detect and sense the brain wave potentials.

15. Claims 27, 30, 31, 32, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over of US 6,001,055 (Souder) as applied to claim 26 above, and further in view of US 6,488,617 (Katz).

In regards to claims 27, 31, and 32, Souder discloses all limitations of claim 26, but does not explicitly state that the device is operable to influence or calculate at lease one of the following: an intrinsic frequency of the brain of the subject within a specified EEG band; a Q-factor of the at least one intrinsic frequency, coherence values of intrinsic frequencies from multiple sites in the brain of a subject within a specified EEG band; and an EEG phase between two sites in the brain of a subject of a specified EEG frequency. Souder also does not disclose logic that changes the frequency of magnet movement in response to EEG readings of a subject during treatment. Katz discloses a device that influences the intrinsic frequencies of the brain of a subject (column 6 lines 16-35), influence a Q factor of the intrinsic frequency (column 6 lines 16-35), influence coherence of intrinsic frequencies among multiple sites in the brain of a subject

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within a specified EEG band (column 8 lines 39-59), and influence an EEG phase between two sites in the brain of a subject (column 8 lines 39-59). In addition Katz teaches a logic device (element 7) that automatically changes frequencies in response to an EEG signal (column 6 line 62- column 8 line 5) and calculates intrinsic frequency data, Q-factors of intrinsic frequency, coherence values of intrinsic frequencies and EEG phase from collected EEG data (column 6 lines 16-35). Katz further states that being able to influence these EEG frequencies allows improvement of deficient or non-optimal mental states (column 1 lines 57-65). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include a logic that changes magnetic stimulation frequencies and calculate EEG information and influence EEG data as taught by Katz in order to improve deficient or non-optimal mental states.

In regards to claim 30, Souder discloses the limitations of claim 26. However, Souder does not explicitly state that the device further comprises a logic that controls the frequencies in increments of about 0.1 Hz. Katz teaches the logic (element 7) that controls frequency stimulation. Because the logic is depicted as a computer, it would be capable of controlling frequencies by increments of 0.1 Hz. Katz includes this feature in his system to influence these EEG frequencies and allow improvement of deficient or non-optimal mental states (column 1 lines 57-65). It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate a logic to control frequency as taught by Katz into the device disclosed by Souder in order to influence EEG frequencies and allow improvement of deficient and non-optimal mental states.

16. In regards to claim 33, Souder discloses all limitations of claim 26. However, the device of Souder does not measure brain activity. Katz teaches a device with magnetic stimulation and

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EEG recording capabilities to produce a desired brain state. In figure 1 a set of electrodes (element 1) are placed on the scalp of the subject to measure the EEG, brain activity, of the individual (column 5 lines 20-33). All the electrodes are operable to detect brain activity. If one electrode is chosen as the one for detecting brain activity, any of the other electrodes can function as a second electrode to detect a reference signal. Katz shows EEG comparisons to determine coherence between the left and right hemispheres (column 8 lines 39-59), which in essence is a difference or correlation between a signal and a reference signal. Electrical resistivity is the measure of how strongly a material opposes the flow of electric current. Because all the electrodes are on skin, which allows electric current to flow, the electrodes would be on an area of low electrical resistivity. Electrical impulse interference is essentially noise. Additionally, because the electrodes are on the scalp, the electrodes are in an area with substantially no electrical impulse activity due to the electrical signals being mostly coming from neurons instead of other sources such as eye muscles. Katz states that having feedback with the therapy allows for the minimization of differences between an actual and desired brain state (see abstract). It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the measurement of EEG signals as taught by Katz with the magnetic device of Souder in order to determine if the therapy is inducing a desired brain state.

17. Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,001,055 (Souder) as applied to claim 26 above, and further in view of US PG Pub 2005/0124848 (Holzner).

18. In regards to claim 36, Souder discloses all limitations of claim 36. However, Souder does not explicitly state that his device improves a characteristic selected from a group consisting

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of peripheral vision response, attention span, immediate reaction time, movement time, simple perceptual reaction time, conflict perceptual reaction time, and any combination thereof. Holzner teaches a device that is used to alter or sustain attention and/or attention capacity (paragraph 583) and improve reaction speed (paragraph 580). The device of Holzner uses magnetic fields (paragraph 89) to provide the magnetic stimulation. Holzner states that using magnetic fields allows for modification of behavior until a target of the user is reached (see abstract). It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the device idea of using magnetic fields to improve attention as taught by Holzner in the device disclosed by Souder in order to achieve a behavioral target of a user.

19. Claims 39-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,001,055 (Souder) as applied to claim 38 above, and further in view of WO 96/15829 (Spiegel).

20. In regards to claim 39 - 43, Souder discloses the limitations of claim 38. However, the device of Souder does not have the magnets in different rotational configurations relative to a treatment surface of the device. Spiegel discloses a device that induces electric fields in biological material using magnetic fields. One particular embodiment of interest is shown in figure 5 where the subunit (elements 30) is coupled to multiple magnets (element 40) where the subunit (elements 30) holds them in two different rotational configurations. The treatment surface in this case is on the side of the magnet that faces away from the subunit (element 30). The subunit is attached to a rotating element (element 52) that is driven by a motor (element 50) which is powered by a power cord. Because the magnets are coupled to the subunit, the second magnet would move at the same frequency as the first magnet. Spiegel further states that the magnets are mounted at some angle between 0 and 180 degrees (page 11 paragraph 2), the

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magnets would be at different rotational orientations if the second magnet is chosen to be at least one magnet across and down from a first chosen magnet. The first portion of the treatment surface is the portion that is under the influence of the first magnet and the second portion of the treatment surface is the portion under influence of the second magnet. Spiegel shows in figure 9 (element 30 or 30") that the first portion generally aligns with a first permanent magnet and a second portion generally aligns with a second permanent magnet because one side groove would influence interact with one side of the displayed arm while the other side of the groove would interact with a different site on the arm. Because the first and second magnets of the device of Spiegel are located in different locations, their magnetic field strengths would be different if measured at the treatment surface simultaneously at different times during the rotation even though the magnets would move at the same frequency due to their coupling. This particular difference in magnetic field strength would be a difference in phase between the magnetic field strengths, which in essence would be a magnetic phase. Spiegel states that this embodiment allows the magnets to exert an electric field within tissue that gives a DC current with a slight ripple (page 11 paragraph 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the design of magnets having different rotational orientations as Spiegel in the device of Souder in order to exert an electric field in tissue for therapy that gives a DC current with a slight ripple.

21. Claims 44 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,001,055 (Souder) and WO 96/15829 (Spiegel) as applied to claim 43 above, and further in view of 6,488,617 (Katz).

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22. In regards to claims 44 and 45. Souder and Spiegel disclose the limitations of claim 43. However, Souder and Spiegel do not state that the magnetic phase of the device is operable to influence an EEG phase between a first site and a second site in the brain of a subject of a specified EEG frequency. Katz teaches the concept of how magnetic phases of a device can influence an EEG phase between a first site and second site in the brain of a subject. Katz shows the activation of magnetic fields at different times and how changing their timing (phase) affects coherence and synchronization (column 8 lines 39- column 9 line 16). Katz also shows that the stimulation sites are usually aligned with magnetic devices (figure 2). Katz states that this allows for the modification to and maintenance of a particular brain state (column 8 lines 39- column 9 line 16). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device of Souder and Spiegel to incorporate the concept of influencing EEG phase in order to modify and maintain particular brain states.

23. As mentioned in claim 43, Spiegel shows in figure 9 (element 30 or 30<sup>``</sup>) that the first site generally aligns with a first permanent magnet and a second site generally aligns with a second permanent magnet because one side groove would influence interact with one side of the arm while the other side of the groove would interact with a different site on the arm.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOSHUA D. LANNU whose telephone number is (571)270-1986. The examiner can normally be reached on Monday-Friday 8:00-5:00.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles A. Marmor can be reached on 571-272-4730. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. D. L./  
Examiner, Art Unit 3735

/John P Lacyk/  
Primary Examiner, Art Unit 3735



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/944,549	11/11/2010	James William Phillips	35784-707.202	5956
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ART UNIT		PAPER NUMBER		
3735				
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		09/13/2013		PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 12/944,549	<b>Applicant(s)</b> PHILLIPS ET AL.	
	<b>Examiner</b> JOSHUA D. LANNU	<b>Art Unit</b> 3735	<b>AIA (First Inventor to File)</b> <b>Status</b> No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)  Responsive to communication(s) filed on 8/6/2013.  
 A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on \_\_\_\_\_.

2a)  This action is **FINAL**.      2b)  This action is non-final.

3)  An election was made by the applicant in response to a restriction requirement set forth during the interview on \_\_\_\_\_; the restriction requirement and election have been incorporated into this action.

4)  Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

5)  Claim(s) 1-21 is/are pending in the application.  
 5a) Of the above claim(s) 12-21 is/are withdrawn from consideration.

6)  Claim(s) \_\_\_\_\_ is/are allowed.

7)  Claim(s) 1-11 is/are rejected.

8)  Claim(s) \_\_\_\_\_ is/are objected to.

9)  Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

\* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see [http://www.uspto.gov/patents/init\\_events/pph/index.jsp](http://www.uspto.gov/patents/init_events/pph/index.jsp) or send an inquiry to [PPHfeedback@uspto.gov](mailto:PPHfeedback@uspto.gov).

**Application Papers**

10)  The specification is objected to by the Examiner.

11)  The drawing(s) filed on 11/11/2010 is/are: a)  accepted or b)  objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

**Priority under 35 U.S.C. § 119**

12)  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

**Certified copies:**

a)  All    b)  Some \*    c)  None of the:  
 1.  Certified copies of the priority documents have been received.  
 2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3.  Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1)  Notice of References Cited (PTO-892)

2)  Information Disclosure Statement(s) (PTO/SB/08)  
 Paper No(s)/Mail Date 12/13/2010, 2/3/2011, 4/6/2011, 1/6/2012, 1/3/2013.

3)  Interview Summary (PTO-413)  
 Paper No(s)/Mail Date. \_\_\_\_\_.

4)  Other: \_\_\_\_\_.

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## DETAILED ACTION

- 1) The present application is being examined under the pre-AIA first to invent provisions.

### *Election/Restrictions*

1. Claims 12-21 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 8/6/2013.

### *Double Patenting*

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory double patenting rejection is appropriate where the claims at issue are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting

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ground provided the reference application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement. A terminal disclaimer must be signed in compliance with 37 CFR 1.321(b).

The USPTO internet Web site contains terminal disclaimer forms which may be used. Please visit <http://www.uspto.gov/forms/>. The filing date of the application will determine what form should be used. A web-based eTerminal Disclaimer may be filled out completely online using web-screens. An eTerminal Disclaimer that meets all requirements is auto-processed and approved immediately upon submission. For more information about eTerminal Disclaimers, refer to <http://www.uspto.gov/patents/process/file/efs/guidance/eTD-info-I.jsp>.

3. Claims 1-10 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1, 2, 3, 4, 5, 7, 9, 10, 12, 13, 16, 18, 19, and 20 of U.S. Patent No. 8,475,354. Although the claims at issue are not identical, they are not patentably distinct from each other because US 8,475,354 discloses the general method claimed in the present application in addition to extra steps that allow the method to be used for a specific purpose. As such, US 8,475,354 anticipates the presently claimed method.

4. Claims 1-3 and 5-11 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-3, 6, 7, 9, 10, 11, 13, 14, and 15 of U.S. Patent No. 8,480,554. Although the claims at issue are not identical, they are not patentably distinct from each other because US 8,480,554 discloses the general method claimed in the present application in addition to extra steps that allow the method to be used for a specific purpose. As such US 8,480,554 anticipates the presently claimed method.

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5. Claims 1, 2, 3, 5, 6, 7, 9, 10, and 11 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1, 2, 3, 5, 6, 7, 9, 10, and 11 of U.S. Patent No. 8,465,408. Although the claims at issue are not identical, they are not patentably distinct from each other because US 8,465,408 discloses the general method claimed in the present application in addition to extra steps that allow the method to be used for a specific purpose. As such US 8,465,408 anticipates the presently claimed method.

#### ***Claim Rejections - 35 USC § 112***

6. The following is a quotation of 35 U.S.C. 112(b):  
(b) CONCLUSION.—The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention.

The following is a quotation of 35 U.S.C. 112 (pre-AIA), second paragraph:  
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claim 7 is rejected under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the inventor or a joint inventor, or for pre-AIA the applicant regards as the invention.

8. Claim 7 recites the limitation "the at least one permanent magnetic" in line 1. There is insufficient antecedent basis for this limitation in the claim. Examiner suggests amending the claim so it reads --the method of claim 6, wherein the strength of the at least one permanent magnet is from about 10 Gauss to about 4 Tesla--. For examination purposes, Examiner is interpreting the claim as dependent on claim 6.

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***Claim Rejections - 35 USC § 102***

9. The following is a quotation of the appropriate paragraphs of pre-AIA 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1 – 5 and 11 are rejected under pre-AIA 35 U.S.C. 102(b) as being anticipated by US 6,488,617 (Katz).

11. In regards to claims 1 and 4, Katz discloses a method that influences EEG frequencies in the brain by applying a magnetic field close to the head of a subject. Katz states that the invention disclosed executes steps to influence intrinsic frequencies of EEG bands to a desired state via magnetic stimulation (column 6, lines 16-61). This action makes the adjustments to a magnetic field based on a subject's intrinsic frequency and would require the determination of the subject's intrinsic frequency in a specified EEG band. Katz discloses the algorithm that is executed by a computational system that adjusts parameters of magnetic stimulation until the distance between the desired EEG signal and an actual EEG signal is minimized (column 7, lines 26-63). Katz also shows in figure 2 a system with magnets that apply the magnetic field to the head of the subject (column 6, line 62 – column 7, line 18). In addition, influencing something doesn't necessarily mean that an effect is actually produced which allows Katz to meet the limitations of the claim. Furthermore, the limitations "for influencing at least one of ...Q-factor" and "wherein the pre-selected intrinsic frequency....subject" are expressions of an intended result and is not given weight (See MPEP 2111.04).

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12. In regards to claim 2, Katz discloses a method that influences EEG frequencies in the brain by applying a magnetic field close to the head of a subject. Katz states that the invention disclosed executes steps to influence intrinsic frequencies of EEG bands to a desired state via magnetic stimulation (column 6, lines 16-61). This action makes the adjustments to a magnetic field based on a subject's intrinsic frequency. Katz discloses the algorithm that is executed by a computational system that adjusts parameters of magnetic stimulation until the distance between the desired EEG signal and an actual EEG signal is minimized (column 7, lines 26-63). Katz also shows in figure 2 a system with magnets that apply the magnetic field to the head of the subject (column 6, line 62 – column 7, line 18). In addition, influencing something doesn't necessarily mean that an effect is actually produced which allows Katz to meet the limitations of the claim. Furthermore, the limitations "for influencing at least one of ...EEG band" and "wherein the pre-selected intrinsic frequency....subject" are expressions of an intended result and is not given weight (See MPEP 2111.04).

13. In regards to claim 3 and 5, Katz discloses all elements of claims 1 and 2. In addition, Katz states the step of measuring EEG data after the application of the magnetic field in claim 21. Katz discloses the step of adjusting parameters of the magnetic field and repeating the applying step with an adjusted parameter in claim 21. Katz further states that pulse frequency of the magnetic field is one of the parameters (column 6, lines 45-54). Katz also teaches the application of a larger magnet set to achieve large scale synchronization of two hemispheres (column 8, line 39 – column 9, line 16), which is interpreted as the application of a magnetic field over a diffuse area of the brain.

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14. In regards to claims 11, Katz discloses the limitations of claims 1 and 2. However, the claim language "...wherein the method provides ...HAMD rating scale" is an expression of an intended result and is not given weight (See MPEP 2111.04).

***Claim Rejections - 35 USC § 103***

15. The following is a quotation of pre-AIA 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

16. Claim 6 is rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over US 6,488,617 (Katz) as applied to claims 1 and 2 above, and further in view of US 6,001,055 (Souder).

17. In regards to claim 6, Katz discloses all limitations of claims 1 and 2. However Katz does not use a permanent magnet to generate the magnetic field for magnetic therapy in the mentioned method. Souder discloses the use of a magnetic therapy device with at least one permanent magnet (element 24; column 2, lines 58-63). Souder states that a moving magnetic field is generated by the rotation of the permanent magnet and subjects the treatment area to varying intensities of north or south pole fields (column 6, lines 1-36). In addition Souder states that in addition to applying the dynamic field enhances the beneficial effects of magnetic therapy (column 1, lines 25-30). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a permanent magnet with rotational motion as taught by Souder in the method of Katz in order to enhance the beneficial effects of magnetic therapy.

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18. Claim 7 is rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over US 6,488,617 (Katz) and US 6,001,055 (Souder) as applied to claim 6 above, and further in view of US 5,667,469 (Zhang et al.).

19. In regards to claims 7, Katz and Souder disclose the limitations of claim 6. However, Katz and Souder do not explicitly state that the strength of the permanent magnet is from about 10 Gauss to about 4 Tesla. Zhang et al. (hereinafter referred to as Zhang) teaches a rotating permanent magnet device for medical therapy. Zhang states that the magnet of the device can generate a magnetic field intensity of about 0.1-0.8 Tesla (column 6, lines 6-24), which falls within the range specified in claim 7. Katz states that increasing the magnitude of the magnetic field implies a greater focus (column 6, lines 40-44). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the permanent magnet with a strength of about 0.1-0.8 Tesla as taught by Zhang in the method disclosed by Katz and Souder in order to increase focus of a magnetic field in a treatment area.

20. Claims 8 and 9 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over 6,488,617 (Katz) as applied to claims 1 and 2 above, and further in view of US 5,788,624 (Lu et al.).

21. In regards to claims 8 and 9, Katz discloses the limitations of claims 1 and 2. However Katz makes no mention of the timing of application of the magnetic field. Lu et al. (hereinafter referred to as Lu) discloses a step of administering magnetic field therapy with a duration of 20-40 minutes once each a day for a period of 12 -14 days (column 3, lines 55-64). Lu states that a transient magnetic field does not make a patient uncomfortable and that exposure to a continuous magnetic field may cause other issues such as headaches, insomnia, etc... (column 3, line 65 –

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column 4, line 14). Lu also states that transient application brings an effective interaction of the blood, body fluids, nervous system, channels, and collaterals of the body within a short period of time (column 2, lines 33-41). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use transient magnetic fields with durations of 20-40 minutes per day over 12-14 days as taught by Lu in the method of Katz in order to provide an effective interaction of blood, body fluids, nervous system, channels, and collaterals of the body.

22. Claim 10 is rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over 6,488,617 (Katz) as applied to claims 1 and 2 above, and further in view of US 3,821,949 (Hartzell et al.).

23. In regards to claim 10, Katz discloses the limitations of claims 1 and 2. Katz teaches the use of a device with magnetic stimulation and EEG recording capabilities to produce a desired brain state. In figure 1 a set of electrodes (element 1) are located on the scalp of the subject to measure the EEG, brain activity, of the individual (column 5, lines 20-33). Electrical resistivity is the measure of how strongly a material opposes the flow of electric current. Because all the electrodes are on skin, which allows electric current to flow, the electrodes would be on an area of low electrical resistivity. Electrical impulse interference is essentially noise. Additionally, because the electrodes are on the scalp, the electrodes are in an area with substantially no electrical impulse interference due to the electrical signals being mostly coming from neurons instead of other sources such as eye muscles. All the electrodes are operable to detect brain activity. If one electrode is chosen as the one for detecting brain activity, any of the other electrodes can function as a second electrode that is operable to detect a reference signal. Katz also states the step of determining the mean frequency, an intrinsic frequency, of a subject in

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order to determine differences between an actual and desired brain state (column 6, lines 16-61). However, Katz does not explicitly state that the intrinsic frequency is determined from the electrical activity from the first electrode and the reference signal detected by the second electrode. Hartzell discloses the specifics of EEG devices. Hartzell specifically outlines the use of a reference electrode (element 38) and an active electrode (element 46) to sense brain wave potentials (column 7, line 55 – column 8, line 14). The biofeedback apparatus (figure 2, element 10a) takes the signals from the active electrode and the reference electrode. The signal is then run through amplifiers and passed through filters for specific frequency ranges to determine the frequencies for alpha, beta, and theta bands (column 8, line 15 – column 9, line 2). Hartzell in particular specifies using the ear lobes as reference and neutral electrodes to sense brain wave potentials (column 8, lines 2-14). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a reference and source electrode as taught by Hartzell in the method disclosed by Katz in order to detect and sense the brain wave potentials.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOSHUA D. LANNU whose telephone number is (571)270-1986. The examiner can normally be reached on Monday-Friday 8:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles A. Marmor can be reached on 571-272-4730. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. D. L./  
Examiner, Art Unit 3735

/Christine D Hopkins/  
Primary Examiner, Art Unit 3735

**ELECTRONICALLY FILED ON FEBRUARY 13, 2014**

**Attorney Docket No. 35784-707.202  
PATENT**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re the Application of:	Group Art Unit: 3735
Inventors: James William Phillips <i>et al.</i>	Examiner: Lannu, Joshua Daryl Deanon
Serial No.: 12/944,549	Confirmation No.: 5956
Filed: November 11, 2010	Customer No. 21971
Title: SYSTEMS AND METHODS FOR NEURO-EEG SYNCHRONIZATION THERAPY	

**AMENDMENT IN RESPONSE TO NON-FINAL OFFICE ACTION**

MAIL STOP AMENDMENT  
Commissioner for Patents  
P.O. Box 1450  
Alexandria VA 22313-1450

Commissioner:

This paper is in response to the Non-Final Office Action mailed September 13, 2013. The shortened statutory period for response expired on December 13, 2013. A Petition for Extension of Time is requested for a reply within the second month and the fee set forth under 37 C.F.R. §1.17(a)(2) is electronically submitted herewith. Thus, this Response is timely filed.

***Amendments to the Claims*** begin on page **2** of this paper.

***Remarks*** begin on page **5** of this paper.

***Conclusion*** begins on page **9** of this paper.

**AMENDMENTS TO THE CLAIMS**

This listing of claims will replace all prior versions, and listings of claims in this application. Applicant reserves the right to pursue any subject matter of any canceled claims in this or any other appropriate patent application. Support for these claims is provided in the remarks following the listing of claims.

1. (Currently Amended) A method comprising:
  - (a) adjusting output of a magnetic field; ~~for influencing at least one of an intrinsic frequency of a specified EEG band of a subject toward a pre-selected intrinsic frequency of the specified EEG band and a Q factor of an intrinsic frequency within a specified EEG band of a subject toward a pre-selected Q factor and~~
    - (b) applying said magnetic field close to a head of ~~the~~ a subject; and
    - (c) moving at least one of  
an intrinsic frequency of a specified EEG band of the subject toward a pre-selected intrinsic frequency of the specified EEG band and  
a Q-factor of an intrinsic frequency within a specified EEG band of the subject toward a pre-selected Q-factor,

wherein the pre-selected intrinsic frequency is a frequency that increases blood flow in the cortex of the subject, and wherein the pre-selected Q-factor is a Q-factor that increases blood flow in the cortex of the subject.
2. (Currently Amended) A method comprising:
  - (a) adjusting output of a magnetic field; ~~for influencing an intrinsic frequency of a specified EEG band of a subject toward a pre-selected intrinsic frequency of the specified EEG band; and~~
    - (b) applying said magnetic field close to a head of ~~the~~ a subject; and
    - (c) moving an intrinsic frequency of a specified EEG band of the subject toward a pre-selected intrinsic frequency of the specified EEG band,

wherein the pre-selected intrinsic frequency is a frequency that decreases blood flow in a lower region of the brain of the subject.
3. (Original) The method of any of claims 1 and 2, further comprising taking EEG measurements of the subject before the adjusting step or after the applying step, or both before the adjusting step and after the applying step.

4. (Original) The method of any of claims 1 and 2, further comprising determining at least one of: the subject's intrinsic frequency of the specified EEG band and the subject's Q-factor of an intrinsic frequency within a specified EEG band.
5. (Original) The method of any of claims 1 and 2, wherein the applying of the magnetic field applies the magnetic field to a diffuse area in a brain of the subject.
6. (Original) The method of any of claims 1 and 2, wherein the magnetic field is generated by movement of at least one permanent magnet.
7. (Currently Amended) The method of claim 86, wherein the strength of the at least one permanent magnet is from about 10 Gauss to about 4 Tesla.
8. (Original) The method of any of claims 1 and 2, wherein the step of applying the magnetic field is for about 5 minutes to about two hours.
9. (Original) The method of any of claims 1 and 2, further comprising repeating the applying step after an interval about 6 hours to about 14 days.
10. (Original) The method of any of claims 1 and 2, further comprising: (a) locating a first electrode operable to detect electrical brain activity on the subject in at least one of an area of low electrical resistivity on a subject, and an area with substantially no electrical impulse interference on a subject; (b) locating a second electrode operable to detect a reference signal on the subject; and (c) determining the intrinsic frequency or the Q-factor or both from the electrical brain activity detected by the first electrode and the reference signal detected by the second electrode.
11. (Original) The method of any of claims 1 and 2, wherein the method provides an improvement as measured using a HAMD rating scale.
12. (Withdrawn) A system comprising: a means for applying a magnetic field to a head of a subject; whereby the means for applying the magnetic field is capable of influencing at least one of: (a) an intrinsic frequency of a brain of the subject within a specified EEG band; (b) a Q-factor of an intrinsic frequency of the brain of the subject within a specified EEG band; (c) a coherence of intrinsic frequencies among multiple sites in the brain of the subject within a specified EEG band; and (d) a EEG phase between two sites in the brain of the subject of a specified EEG frequency, and a device capable of determining the blood flow of at least one of the cortex and a lower region of the brain.
13. (Withdrawn) The system of claim 14, comprising at least one permanent magnet.

14. (Withdrawn) The system of claim 14, wherein the magnetic field is generated by movement of at least one permanent magnet.
15. (Withdrawn) The system of claim 14, wherein the movement of the at least one said magnet is at a frequency between about 0.5 Hz and about 100 Hz.
16. (Withdrawn) The system of claim 14, wherein said movement comprises at least one of rotational motion, linear motion, and swing motion.
17. (Withdrawn) The system of claim 14, wherein said movement generates an alternating magnetic field.
18. (Withdrawn) The system of claim 14, further comprising logic that controls the frequency to be any frequency between about 0.5 Hz and about 100 Hz in increments of about 0.1 Hz.
19. (Withdrawn) The system of claim 14, further comprising logic that automatically changes the frequency in response to EEG readings of a subject during treatment.
20. (Withdrawn) The system of claim 14, further comprising logic that calculates information from EEG data collected from the subject within a specified EEG band, wherein said information comprises at least one of items listed below: (a) at least one intrinsic frequency; (b) Q-factor of the at least one intrinsic frequency; (c) a coherence value of intrinsic frequencies; (d) an EEG phase; and (e) any combination thereof.
21. (Withdrawn) The system of claim 14, further comprising: (a) a first electrode operable to detect electrical brain activity; and (b) a second electrode operable to detect a reference signal; wherein the first electrode is located on the subject in at least one of: an area of low electrical resistivity on a subject, and an area with substantially no electrical impulse interference on a subject, and wherein the second electrode is located on the subject.

## REMARKS

The following remarks are in response to the Examiner's Non-Final Office Action mailed on September 13, 2013. Claims 1, 2 and 7 are amended. Support for claim amendments can be found in the application as filed. See, e.g., paragraphs [0227] and [0228]. Claims 1-21 are pending (of which, Claims 12-21 are Withdrawn). Reconsideration is respectfully requested in light of the following remarks.

### ***Double Patenting***

Claims 1-10 were rejected under the judicially created doctrine of obviousness-type double patenting as allegedly being unpatentable over claims 1, 2, 3, 4, 5, 7, 9, 10, 12, 13, 16, 18, 19, and 20 of U.S. Patent No. 8,475,354.

Claims 1-3 and 5-11 were also rejected as being unpatentable over claims 1-3, 6, 7, 9, 10, 11, 13, 14, and 15 of U.S. Patent No. 8,480,554.

Claims 1, 2, 3, 5, 6, 7, 9, 10, and 11 were also rejected as being unpatentable over claims 1, 2, 3, 5, 6, 7, 9, 10, and 11 of U.S. Patent No. 8,465,408.

While Applicants do not necessarily agree with this position taken by the Examiner, Applicants request that such rejection be held in abeyance and Applicants will then consider submitting a terminal disclaimer or additional arguments if appropriate.

### ***Claim Rejection - 35 USC § 112***

Claim 7 was rejected under 35 U.S.C. 112 (b) or 35 U.S.C 112 (pre-AIA), second paragraph. Applicants thank the Examiner for his suggested amendment, which has been made in the presently amended claim set. Withdrawal of this rejection basis is respectfully requested.

### ***Claim Rejections – 35 USC § 102***

Claims 1-5 and 11 were rejected under pre-AIA 35 U.S.C. 102(b) as being anticipated by US 6,488,617 (“Katz”).

Katz fails to anticipate the elements of Claims 1-5 and 11, at least. Katz describes a feedback system, which in real time, tries to move a subject from a current brain state into a desired brain state via magnetic stimulation. Brain states targeted in Katz are categorized based on the level of alertness of the subject. (Col. 1, line 14 to 34). These states include sleep states

associated with brain wave frequencies in the delta and theta ranges of 1.5 to 3.5 Hz and 3.5 to 7 Hz, respectively, a relaxed state associated with brain wave frequencies in the alpha range of 7.5 to 12.5 Hz, and an excited state associated with brain wave frequencies in the beta range of 12.5 to 20 Hz (*Id.*, *See also*, Col. 6, lines 16-35). Thus, each state of Katz is within a different EEG band, and Katz tries to move the subject from one state (in one band) to another state (in another band). At least the following distinctions can be made from the present claims.

With respect to Claims 1 and 2, as amended, Katz fails to teach or suggest moving “an intrinsic frequency of a specified EEG band of the subject toward a pre-selected intrinsic frequency of the specified EEG band” and with respect to Claim 1, Katz further fails to teach or suggest moving “a Q-factor of an intrinsic frequency within a specified EEG band of a subject toward a pre-selected Q-factor.” Additionally, Katz fails to disclose or suggest that “the pre-selected intrinsic frequency is a frequency that increases blood flow in the cortex of the subject” or that “the pre-selected Q-factor is a Q-factor that increases blood flow in the cortex of the subject” as required in Claim 1. Similarly, with respect to Claim 2, Katz fails to disclose or suggest that “the pre-selected intrinsic frequency is a frequency that decreases blood flow in a lower region of the brain of the subject”

In contrast, Katz targets a desired brain state, which encompasses a range of frequencies in multiple bands. Claim 1 of the present invention targets a pre-selected intrinsic frequency, not a state encompassing a range of frequencies. The Office Action tacitly acknowledges this difference by referring to the desired state of Katz and frequencies in each state, as opposed to a particular pre-selected frequency as is claimed.

Further, Claim 1 of the present invention recites adjusting output of a magnetic field and moving the subject’s intrinsic frequency in a specified EEG band toward a pre-selected intrinsic frequency of the same EEG band, wherein the pre-selected intrinsic frequency is a frequency that increases blood flow in the cortex of the subject, and wherein the pre-selected Q-factor is a Q-factor that increases blood flow in the cortex of the subject. On the other hand, Katz’s only intention and goal is to move a subject from a current brain state into a desired brain state. Since the brain states correlate to separate EEG bands in Katz (i.e. from relaxed in the alpha band to sleep in the delta or theta band), Katz’ methods and devices move the brain waves from one band to another.

The Office Action states “Katz discloses a method that influences EEG frequencies in the brain by applying a magnetic field close to the head of a subject. Katz states that the invention

disclosed executes steps to influence intrinsic frequencies of EEG bands to a desired state via magnetic stimulation” (column 6, lines 16-61). This action makes the adjustments to a magnetic field based on a subject's intrinsic frequency and would require the determination of the subject's intrinsic frequency in a specified EEG band.” On the contrary, Katz's actually says that the system compares the characteristics of the actual brain state to those of the desired brain state. The characteristics of the brain state are the temporal and spatial distributions of the *various frequency bands of the brain signal, e.g., the mean frequency corresponding to various magnitudes of alpha, beta, delta, and theta rhythms*. The therapeutic goal determines the gap between the measured and desired brain state, how the system adjusts key parameters of the magnetic stimulation in order to reduce the gap between the actual and desired state, and what constitutes an acceptable brain state. *For example, an acceptable brain state may be achieved by obtaining lower frequency states*, between 1.5 and 7.5 HZ, to induce and/or maintain sleep, producing alpha frequency brain waves (between 8 and 13 HZ) to achieve calm or relaxation, etc. In sum, Katz is concerned with moving the current brain state to another brain state (in Column 6 lines 16-61). In contrast, Claims 1 and 2 of the present invention, and claims dependent therefrom, require moving the intrinsic frequency in a single EEG band, or moving the Q factor of an intrinsic frequency in a single EEG band (Claim 1).

Based on the above, at least, Applicants submit the independent Claims 1 and 2, as amended, and all claims dependent therefrom, are in condition for allowance and advancement to allowance is earnestly solicited.

### ***Claim Rejections - 35 USC § 103***

Claim 6 was rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over US 6,488,617 (“Katz”) as applied to claims 1 and 2 above, and further in view of US 6,001,055 (“Souder”). Claim 7 was rejected under pre-AIA U.S.C. 103(a) as being unpatentable over US 6,488,617 (“Katz”) and US 6,001,055 (“Souder”) as applied to claim 6 above, and further in view of US 5,667,469 (“Zhang et al.”). Claims 8 and 9 were rejected under pre-AIA U.S.C. 103(a) as being unpatentable over US 6,488,617 (“Katz”) as applied to claims 1 and 2 above, and further in view of US 5,788,624 (“Lu et al.”). Claim 10 was rejected under pre-AIA U.S.C. 103(a) as being unpatentable over US 6,488,617 (“Katz”) as applied to claims 1 and 2 above, and further in view of US 3,821,949 (“Hartzell et al.”).

To establish a *prima facie* case of obviousness, the cited art itself or “the inferences and creative steps that a person of ordinary skill in the art would [have] employ[ed]” at the time of the

invention are to have taught or suggested the claim elements. *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1742 (2007); *See also* MPEP § 2143.03. Thus, the Examiner must make “a searching comparison of the claimed invention – including all its limitations – with the teaching of the prior art.” *In re Ochiai*, 71 F.3d 1565, 1572 (Fed. Cir. 1995). As such, “obviousness requires a suggestion of all limitations in a claim.” *CFMT, Inc. v. Yieldup Intern. Corp.*, 349 F.3d 1333, 1342 (Fed. Cir. 2003) (citing *In re Royka*, 490 F.2d 981, 985 (CCPA 1974)).

As noted above with regard to Claims 1, 2, Katz fails to disclose or suggest all of the elements in each of the noted independent claims. None of Souder, Zhang, Lu, and Hartzell whether considered alone or in combination with Katz or any other reference make up for the deficiencies of Katz, as noted above. Thus, Applicants submit that independent Claims 1 and 2, and all claims dependent therefrom, are in condition of allowance.

## CONCLUSION

In light of the remarks set forth above, Applicants believe that the pending claims are under condition for allowance. Applicants respectfully solicit the Examiner to expedite the prosecution of this patent application to issuance. Should the Examiner have any questions, the Examiner is encouraged to telephone the undersigned.

The Commissioner is authorized to charge any underpayment or credit any overpayment to Deposit Account No. 23-2415 (Attorney Docket No. 35784-707.202).

Respectfully submitted,

Date: February 13, 2014

By: /Kristin Havranek/  
Kristin Havranek  
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/944,549	11/11/2010	James William Phillips	35784-707.202	5956
21971	7590	03/25/2014	EXAMINER	
WILSON, SONSINI, GOODRICH & ROSATI 650 PAGE MILL ROAD PALO ALTO, CA 94304-1050				LANNU, JOSHUA DARYL DEANON
ART UNIT		PAPER NUMBER		
3735				
		NOTIFICATION DATE		DELIVERY MODE
		03/25/2014		ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@wsgr.com

<b>Office Action Summary</b>	<b>Application No.</b> 12/944,549	<b>Applicant(s)</b> PHILLIPS ET AL.	
	<b>Examiner</b> JOSHUA D. LANNU	<b>Art Unit</b> 3735	<b>AIA (First Inventor to File)</b> <b>Status</b> No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)  Responsive to communication(s) filed on 2/13/2014.  
 A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on \_\_\_\_\_.

2a)  This action is **FINAL**.      2b)  This action is non-final.

3)  An election was made by the applicant in response to a restriction requirement set forth during the interview on \_\_\_\_\_; the restriction requirement and election have been incorporated into this action.

4)  Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims\***

5)  Claim(s) 1-21 is/are pending in the application.  
5a) Of the above claim(s) 12-21 is/are withdrawn from consideration.

6)  Claim(s) \_\_\_\_\_ is/are allowed.

7)  Claim(s) 1-11 is/are rejected.

8)  Claim(s) \_\_\_\_\_ is/are objected to.

9)  Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

\* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see [http://www.uspto.gov/patents/init\\_events/pph/index.jsp](http://www.uspto.gov/patents/init_events/pph/index.jsp) or send an inquiry to [PPHfeedback@uspto.gov](mailto:PPHfeedback@uspto.gov).

**Application Papers**

10)  The specification is objected to by the Examiner.

11)  The drawing(s) filed on \_\_\_\_\_ is/are: a)  accepted or b)  objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

**Priority under 35 U.S.C. § 119**

12)  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

**Certified copies:**

a)  All    b)  Some\*\*    c)  None of the:  
1.  Certified copies of the priority documents have been received.  
2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3.  Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\*\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1)  Notice of References Cited (PTO-892)

2)  Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b)  
Paper No(s)/Mail Date 3/4/2014.

3)  Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.  
4)  Other: \_\_\_\_\_.

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## **DETAILED ACTION**

This action is a response to the communication received on 2/13/2014. Examiner acknowledges the amendments made to claims 1, 2, and 7.

### ***Double Patenting***

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory double patenting rejection is appropriate where the claims at issue are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the reference application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement. A terminal disclaimer must be signed in compliance with 37 CFR 1.321(b).

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The USPTO internet Web site contains terminal disclaimer forms which may be used.

Please visit <http://www.uspto.gov/forms/>. The filing date of the application will determine what form should be used. A web-based eTerminal Disclaimer may be filled out completely online using web-screens. An eTerminal Disclaimer that meets all requirements is auto-processed and approved immediately upon submission. For more information about eTerminal Disclaimers, refer to <http://www.uspto.gov/patents/process/file/efs/guidance/eTD-info-I.jsp>.

2. Claims 1-10 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1, 2, 3, 4, 5, 7, 9, 10, 12, 13, 16, 18, 19, and 20 of U.S. Patent No. 8,475,354. Although the claims at issue are not identical, they are not patentably distinct from each other because US 8,475,354 discloses the steps claimed in the present application. Furthermore, any change in frequency or Q-factor in one section of the cortex would increase blood flow in one area of the cortex and decrease blood flow in another area of the cortex because blood flow to different sections of the brain changes with levels of neuronal activity. As such, US 8,475,354 anticipates the presently claimed method.

3. Claims 1-3 and 5-11 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-3, 6, 7, 9, 10, 11, 13, 14, and 15 of U.S. Patent No. 8,480,554. Although the claims at issue are not identical, they are not patentably distinct from each other because US 8,480,554 discloses the general method claimed in the present application. Furthermore, any change in frequency or Q-factor in one section of the cortex would increase blood flow in one area of the cortex and decrease blood flow in another area of the cortex because blood flow to different sections of the brain changes with levels of neuronal activity. As such US 8,480,554 anticipates the presently claimed method.

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4. Claims 1, 2, 3, 5, 6, 7, 9, 10, and 11 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1, 2, 3, 5, 6, 7, 9, 10, and 11 of U.S. Patent No. 8,465,408. Although the claims at issue are not identical, they are not patentably distinct from each other because US 8,465,408 discloses the general method claimed in the present application. Furthermore, any change in frequency or Q-factor in one section of the cortex would increase blood flow in one area of the cortex and decrease blood flow in another area of the cortex because blood flow to different sections of the brain changes with levels of neuronal activity. As such US 8,465,408 anticipates the presently claimed method.

***Claim Rejections - 35 USC § 112***

5. The following is a quotation of 35 U.S.C. 112(b):  
 (b) CONCLUSION.—The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention.

The following is a quotation of 35 U.S.C. 112 (pre-AIA), second paragraph: The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-11 are rejected under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the inventor or a joint inventor, or for pre-AIA the applicant regards as the invention.

7. Claims 1 and 2 are unclear because it is not apparent what is doing the moving of the intrinsic frequency of the EEG band or Q-factor. Examiner suggests amending the claim to positively recite the item that moves the intrinsic frequency of the EEG band OR Q-factor so that it reads –... moving, using the magnetic field, ...–.

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***Allowable Subject Matter***

1. Claims 1 and 2 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), 2nd paragraph, and the double patenting rejection set forth in this Office action.
2. The following is a statement of reasons for the indication of allowable subject matter:
3. In regards to claims 1 and 2, the prior art of record does not teach or suggest a method as claimed by Applicant, that includes the step of moving at least one of an intrinsic frequency of a specified EEG band of the subject toward a pre-selected intrinsic frequency of the specified EEG band and a Q-factor of an intrinsic frequency within a specified EEG band of the subject toward a pre-selected Q-factor using said magnetic field.
4. Claims 3-11 are dependent on allowable matter from claims 1 or 2 and are thus allowable.

***Conclusion***

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

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will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOSHUA D. LANNU whose telephone number is (571)270-1986. The examiner can normally be reached on Monday-Friday 8:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles A. Marmor can be reached on 571-272-4730. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. D. L./  
Examiner, Art Unit 3735

/CHRISTINE HOPKINS/  
Primary Examiner, Art Unit 3735

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**ELECTRONICALLY FILED ON JUNE 10, 2014**

**Attorney Docket No. 35784-707.202**  
**PATENT**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re the Application of:	Group Art Unit: 3735
Inventors: James William Phillips <i>et al.</i>	Examiner: Lannu, Joshua Daryl Deanon
Serial No.: 12/944,549	Confirmation No.: 5956
Filed: November 11, 2010	Customer No. 21971
Title: SYSTEMS AND METHODS FOR NEURO-EEG SYNCHRONIZATION THERAPY	

**RESPONSE TO FINAL OFFICE ACTION**

MAIL STOP AF  
Commissioner for Patents  
P.O. Box 1450  
Alexandria VA 22313-1450

Commissioner:

This paper responds to the Final Office Action dated March 25, 2014 setting an initial due date of June 25, 2014, with a two month Advisory Action deadline of May 25, 2014. Therefore, Applicants believe that this response is being timely filed. Applicants believe no fees are due with this submission.

***Amendments to the Claims*** begin on page **2** of this paper.

***Remarks*** begin on page **5** of this paper.

***Conclusion*** begins on page **6** of this paper.

***AMENDMENTS TO THE CLAIMS***

This listing of claims will replace all prior versions, and listings of claims in this application. Applicant reserves the right to pursue any subject matter of any canceled claims in this or any other appropriate patent application. Support for these claims is provided in the remarks following the listing of claims.

1. (Currently Amended) A method comprising:
  - (a) adjusting output of a magnetic field;
  - (b) applying said magnetic field close to a head of a subject; and
  - (c) moving, using the magnetic field, at least one of  
an intrinsic frequency of a specified EEG band of the subject toward a pre-selected  
intrinsic frequency of the specified EEG band and  
a Q-factor of an intrinsic frequency within a specified EEG band of the subject  
toward a pre-selected Q-factor,  
wherein the pre-selected intrinsic frequency is a frequency that increases blood flow in the  
cortex of the subject, and wherein the pre-selected Q-factor is a Q-factor that increases blood  
flow in the cortex of the subject.
2. (Currently Amended) A method comprising:
  - (a) adjusting output of a magnetic field;
  - (b) applying said magnetic field close to a head of a subject; and
  - (c) moving, using the magnetic field, an intrinsic frequency of a specified EEG band of  
the subject toward a pre-selected intrinsic frequency of the specified EEG band,  
wherein the pre-selected intrinsic frequency is a frequency that decreases blood flow in a  
lower region of the brain of the subject.
3. (Original) The method of any of claims 1 and 2, further comprising taking EEG  
measurements of the subject before the adjusting step or after the applying step, or both  
before the adjusting step and after the applying step.
4. (Original) The method of any of claims 1 and 2, further comprising determining at least one  
of: the subject's intrinsic frequency of the specified EEG band and the subject's Q-factor of  
an intrinsic frequency within a specified EEG band.

5. (Original) The method of any of claims 1 and 2, wherein the applying of the magnetic field applies the magnetic field to a diffuse area in a brain of the subject.
6. (Original) The method of any of claims 1 and 2, wherein the magnetic field is generated by movement of at least one permanent magnet.
7. (Previously Presented) The method of claim 6, wherein the strength of the at least one permanent magnet is from about 10 Gauss to about 4 Tesla.
8. (Original) The method of any of claims 1 and 2, wherein the step of applying the magnetic field is for about 5 minutes to about two hours.
9. (Original) The method of any of claims 1 and 2, further comprising repeating the applying step after an interval about 6 hours to about 14 days.
10. (Original) The method of any of claims 1 and 2, further comprising: (a) locating a first electrode operable to detect electrical brain activity on the subject in at least one of an area of low electrical resistivity on a subject, and an area with substantially no electrical impulse interference on a subject; (b) locating a second electrode operable to detect a reference signal on the subject; and (c) determining the intrinsic frequency or the Q-factor or both from the electrical brain activity detected by the first electrode and the reference signal detected by the second electrode.
11. (Original) The method of any of claims 1 and 2, wherein the method provides an improvement as measured using a HAMD rating scale.
12. (Withdrawn) A system comprising: a means for applying a magnetic field to a head of a subject; whereby the means for applying the magnetic field is capable of influencing at least one of: (a) an intrinsic frequency of a brain of the subject within a specified EEG band; (b) a Q-factor of an intrinsic frequency of the brain of the subject within a specified EEG band; (c) a coherence of intrinsic frequencies among multiple sites in the brain of the subject within a specified EEG band; and (d) a EEG phase between two sites in the brain of the subject of a specified EEG frequency, and a device capable of determining the blood flow of at least one of the cortex and a lower region of the brain.
13. (Withdrawn – Currently Amended) The system of claim [[14]] 12, comprising at least one permanent magnet.
14. (Withdrawn – Currently Amended) The system of claim [[14]] 12, wherein the magnetic field is generated by movement of at least one permanent magnet.

15. (Withdrawn – Currently Amended) The system of claim [[14]] 12, wherein the movement of the at least one said magnet is at a frequency between about 0.5 Hz and about 100 Hz.
16. (Withdrawn – Currently Amended) The system of claim [[14]] 12, wherein said movement comprises at least one of rotational motion, linear motion, and swing motion.
17. (Withdrawn – Currently Amended) The system of claim [[14]] 12, wherein said movement generates an alternating magnetic field.
18. (Withdrawn – Currently Amended) The system of claim [[14]] 12, further comprising logic that controls the frequency to be any frequency between about 0.5 Hz and about 100 Hz in increments of about 0.1 Hz.
19. (Withdrawn – Currently Amended) The system of claim [[14]] 12, further comprising logic that automatically changes the frequency in response to EEG readings of a subject during treatment.
20. (Withdrawn – Currently Amended) The system of claim [[14]] 12, further comprising logic that calculates information from EEG data collected from the subject within a specified EEG band, wherein said information comprises at least one of items listed below: (a) at least one intrinsic frequency; (b) Q-factor of the at least one intrinsic frequency; (c) a coherence value of intrinsic frequencies; (d) an EEG phase; and (e) any combination thereof.
21. (Withdrawn – Currently Amended) The system of claim [[14]] 12, further comprising: (a) a first electrode operable to detect electrical brain activity; and (b) a second electrode operable to detect a reference signal; wherein the first electrode is located on the subject in at least one of: an area of low electrical resistivity on a subject, and an area with substantially no electrical impulse interference on a subject, and wherein the second electrode is located on the subject.

**REMARKS**

The following remarks are in response to the Examiner's final Office Action dated March 25, 2014. Claims 1, 2 are amended. Support for claim amendments can be found in the application as filed. Claims 1-21 are pending (of which, Claims 12-21 are Withdrawn – Currently Amended). Reconsideration is respectfully requested in light of the following remarks.

***Double Patenting***

Claims 1-10 were rejected on the ground of nonstatutory double patenting as allegedly being unpatentable over claims 1, 2, 3, 4, 5, 7, 9, 10, 12, 13, 16, 18, 19, and 20 of U.S. Patent No. 8,475,354.

Claims 1-3 and 5-11 were rejected on the ground of nonstatutory double patenting as allegedly being unpatentable over claims 1-3, 6, 7, 9, 10, 11, 13, 14, and 15 of U.S. Patent No. 8,480,554.

Claims 1, 2, 3, 5, 6, 7, 9, 10, and 11 were rejected on the ground of nonstatutory double patenting as allegedly being unpatentable over claims 1, 2, 3, 5, 6, 7, 9, 10, and 11 of U.S. Patent No. 8,465,408.

Without conceding the appropriateness of such rejections and in order to advance prosecution, Terminal Disclaimers addressing the double patenting rejections are being filed with this Response and entry of the same is respectfully requested.

***Claim Rejection - 35 USC § 112***

Claims 1-11 were rejected under 35 U.S.C. 112(b) or 35 U.S.C 112 (pre-AIA), second paragraph as being indefinite for allegedly failing to particularly point out and distinctly claim the subject matter the Applicants regard as their invention.

The Examiner suggested "amending the claim to positively recite the item that moves the intrinsic frequency of the EEG band OR Q-factor so that it reads -- ...moving, using the magnetic field,...--". Without conceding the appropriateness of such rejection and in order to advance prosecution, Applicants have made the suggested amendments to claims 1 and 2 and respectfully request that this rejection be withdrawn and the pending claims be advanced to allowance.

Appl. No. 12/944,549

Attorney Docket No. 35784-707.202

Response/Amdmt Date: June 10, 2014

PATENT

## RESPONSE TO FINAL OFFICE ACTION

**CONCLUSION**

In light of the remarks set forth above, Applicants believe that the pending claims are under condition for allowance. Applicants respectfully solicit the Examiner to expedite the prosecution of this patent application to issuance. Should the Examiner have any questions, the Examiner is encouraged to telephone the undersigned.

The Commissioner is authorized to charge any underpayment or credit any overpayment to Deposit Account No. 23-2415 (Attorney Docket No. 35784-707.202).

Respectfully submitted,

Date: June 10, 2014

By: /Kristin Havranek/  
Kristin Havranek  
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